
Comparison of Tasks and Activities in Physician-Medex Practices



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THE MAJOR PREMISE underlying the physician's assistant movement is that physicians spend too much time performing tasks which could be safely delegated to another type of worker, if that worker were properly trained and available. The MEDEX programs, previously described by Smith (1) and Strauss (2), represent one approach to the training of physician's assistants. A large number of physician's assistants have been trained and deployed through MEDEX programs.

The present study is concerned with the activities of physician's assistants of the Medex type in primary care settings. Each Medex trainee in this study received 3 months of didactic classroom training at Dartmouth Medical School and spent 1 year in apprenticeship with his preceptor-physician. The major emphasis in the didactic period

is on teaching the Medex to take a complete history and skillfully perform a physical examination. In addition, the trainee is taught to follow written protocols for the management of patients with a number of common presenting complaints (3).

Much of the debate concerning the usefulness and appropriateness of the physician's assistant has centered around two possible roles that this worker could assume. One role is that of an assistant to the physician, someone who could gather information for the physician and carry out his instructions (4). The other role, often cited by those with reservations about the usefulness of physician's assistants, is that they might become relatively independent providers of medical services, involved in diagnostic and therapeutic decision making without benefit of the educational or licensing procedures required of physicians. All directors of MEDEX programs, however, are univocal in stating that the Medex will not exercise independent medical judgment because he is not qualified to do so and because he is specifically trained not to do so.

MEDEX program trainees have varied backgrounds of formal training and extensive experience in the care of military or civilian patients. All trainees share 3 months of core classroom-based experience before entering into unique preceptorships. The preceptor is given wide latitude in determining the tasks and responsibilities which his Medex will assume in the practice setting. Since each Medex has experienced a highly individualized educational process, the question of whether a Medex is, in fact, acting as a relatively independent provider is a very real one.

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Methods

The information reported here was generated from two instruments: a 24-hour activity log and a task inventory list, part of the "Uniform Manpower Evaluation Protocol" developed at the National Center for Health Services Research and Development, Department of Health, Education, and Welfare. Additional information on characteristics of patients was obtained from patient-contact forms maintained by the physician during the study period. All instruments were completed either by the physician before the arrival of his Medex, or several times during the preceptorship by both the Medex and the physician to document changes during the training period. Since this study is primarily concerned with providing a picture of a "finished" Medex and not with the evolutionary stages, only the data from the final collection period near the end of the training are presented.

Each physician and each Medex indicated on the activity log where and how he spent the day. Days were divided into half-hour periods, and the respondent checked whether each half-hour period was spent in his home, office, hospital, or other location and whether it was devoted to patient care, medical education, or personal matters. Respondents were instructed to maintain activity logs for 14 consecutive days in each of five collection periods. Ten physicians and all 22 Medex complied in the last period. Hourly figures were converted to percentages, and then the activity log results were averaged among all physicians and all Medex to produce a single profile for each provider type (physician and Medex) of what happens in a typical day by activity and location. The results may be somewhat biased because 12 physicians did not submit activity logs and some respondents may have recorded an entire day's activities at the end of the day rather than at half-hour intervals as requested.

If a Medex was functioning relatively independently, the profile of his day would not be expected to differ significantly from the physician's. If, on the other hand, his primary function was to gather data, he could be expected to be spending more of his working time at the physician's office than at the hospital or in the homes of patients. In addition, the Medex would log more personal time at home than the physician because his duties

would require less time than the physician's functions.

The task inventory (copyright 1971, Technomics, Inc., 7405 Colshire Drive, McLean, Va.) is a list of specific, mutually exclusive tasks which cover a significant portion of the tasks attendant to providing services in a primary care setting. The respondents, physicians, and Medex reported the frequency with which each task was performed in the past month and the time required for the completion of each task. Multiplying frequency by duration produced a measure of total time spent on each task during the month in question. Twelve physicians and all 22 Medex completed task inventories at the end of the preceptorship.

To facilitate interpretation, the 460 tasks in the inventory were divided into 10 categories, and the time spent in each category was computed as a percentage of the total time. When the percentages are averaged for preceptors, and then similarly for the Medex, the two profiles indicate how each type of provider distributed his time among the tasks.

Responses to the task inventory rely entirely on the respondent's subjective perception of his activities. Accuracy primarily depends on the accuracy of the providers' perceptions. When the time spent for each task is multiplied by its frequency and the products for all tasks added together, the resulting total time is significantly more than one would expect these physicians to spend at work. A likely explanation is that the physicians record separate times for tasks that are actually being performed simultaneously. Physicians, for example, often take a history while examining a patient. Similarly, physicians often counsel patients while treating them or writing a prescription. Thus, a physician may correctly report that it takes him 10 minutes to give emergency treatment or first aid for laceration and 5 minutes to counsel and instruct the patient in the treatment regimen for laceration when in fact only 10 minutes have actually elapsed.

The task inventory categories, their descriptions, and an illustration of each task follow:

Patient handling. Physical handling of patient primarily for transport, comfort, and support: for example, prepare skin site with antiseptic before incision; suturing, treatment, or examination.

Patient instruction. Diagnostic and therapeutic instruction and counseling: for example, explain major surgical procedure to patient and family.

Patient examination. Diagnostic tests and measurements, observations, monitoring, and related tasks involving the patient (does not include clinical laboratory procedures): for example, check blood pressure.

Patient treatment. Direct application of therapeutic procedures and related tasks: for example, give emergency first aid for shock.

Treatment planning. Organizing and coordinating the direct application of therapeutic procedures and related tasks: for example, evaluate symptoms of patient complaining of shortness of breath.

Handling and preparation of medications. Receipt, storage, preservation, preparation, dispensing, and issuing medications, including related calculations: for example, answer inquiries about drug reaction.

Laboratory tests and procedures. Collection, processing, and analysis of biological specimens and environmental samples, including related calculations: for example, determining pH of gastric juice.

Training. Education or skill development, or both, of medical personnel in formal or on-the-job settings: for example, train other employees.

Administrative tasks. Complex tasks not concerned with direct patient care but required to manage, maintain, administer, and operate health care delivery systems: for example, dictate summaries of these functions.

Recordkeeping tasks. Noncomplex routine tasks not concerned with direct patient care but required for the maintenance of records, processing of forms, and simple coordination of activities: for example, maintain duty, call, or emergency roster.

As an assistant to the physician, the Medex would be expected to spend more time than the physician in data-gathering tasks that are in the categories of examination of patients and laboratory tests and procedures and less time in the areas of treatment, decision making, and counseling that are in the categories of treatment, treatment planning, and instruction of patients. Also, it would be anticipated that the physician would spend more time performing tasks in the administrative category, since these tasks often require complex management decisions concerning the operation of the practice.

During the activity log and task inventory data collection periods, patient-contact forms were

maintained on the age and sex of each patient seen in the practice. This information was used to determine whether the patients seen by the physician differ from those seen by the Medex. With respect to age, it was expected that a larger proportion of patients seen by the Medex would be young, because younger patients tend to have less serious complaints and often they are brought to the physician's office for routine physical examinations and preventive care.

With respect to sex, it seemed likely that more females than males would be seen by the physician. The military and didactic training of the Medex did not include obstetrical or gynecologic tasks; hence, a large number of female patients would not be seen by the Medex. Women of child-bearing age represent a sizable portion of a primary care physician's adult patients. If the Medex routinely does not see these patients, then the age and sex distribution of the patients he does see will be affected.

To determine if preceptors and Medex do, in fact, serve a different clientele, the percentage of patients in each age and sex category was computed for all the patients seen by the physician alone, the Medex alone, and by both the physician and the Medex.

Table 1. Percentage of time physicians and Medex spent, by activity log category

Activity log category	Physicians (N=10)	Medex (N=10)	Probability ¹
Own home:			
Medical education	1.6	2.0	ns
Personal	53.1	66.2	ns
Office:			
Business	15.9	17.6	ns
Medical education	1.3	.4	ns
Hospital:			
Emergency	2.1	1.3	ns
Routine	14.8	7.4	<.05
Patient's home:			
Emergency . . . . .	.6	.1	<.05
Routine . . . . .	.8	.4	ns
Travel:			
Emergency . . . . .	.2	.1	ns
Routine	3.4	1.8	ns
Other locations:			
Emergency . . . . .	.8	.1	ns
Routine	4.1	2.1	ns
Medical education	1.4	.5	ns
Total	100.0	100.0	.....

¹ Sign test based on 10 physician-Medex pairs.
NOTE: ns, not significant.

Results

Activity log. The activities of 10 physicians and their respective Medex as reported on their activity logs at the end of the preceptorship are shown in table 1. Significant statistical differences between the activities of physicians and the Medex appear in two categories: hospital—routine and patient's home—emergency. As predicted, the Medex spends a smaller percentage of his time in making hospital routine and patient's home emergency visits. The hospital and the patient's home are areas of more independent action than the physician's office. The Medex spends more time in the office than does the physician, presumably receiving more supervision there than would be possible at other locations. As expected, there is a sizable percentage difference between physician and Medex in the category home—personal, but the difference falls short of statistical significance.

Task inventory. Table 2 shows a comparison of the task inventory data from 12 physicians and 22 Medex and represents all of the task inventories completed during the last part of the preceptorship phase of training. The frequency of each task was multiplied by the time necessary to perform the tasks in each category and summed to obtain an estimate of total time spent for that month. The sum of total time spent provided the denominator for percentages of total time spent in each of the several categories presented. The Medex in the sample spent significantly more time in examination of patients than the physicians. The physicians reported significantly more time spent in instruction of patients and in administrative tasks. The reported differences between Medex and physicians in treatment planning suggest greater physician involvement in this activity.

The results of the task inventory provide a clearer picture of the activities of the Medex compared with those of a physician. The Medex is more involved in patient examination and less involved in patient instruction, treatment planning, and administrative tasks. This coincides with the role of a Medex as an information gatherer for the physician, but the differences are at a relatively low level of significance in all categories except administrative tasks. A detailed examination of the patient instruction, patient treatment, and treatment planning categories seems indicated since it is possible that preceptors and Medex not only differ with respect to the broader task cate-

Table 2. Percentage of time physicians and Medex spent, by task inventory category

Task inventory category	Physicians (N=12)	Medex (N=22)	Probability ¹
Patient handling.....	0.1	0.3	ns
Patient instruction.....	17.9	14.8	<.05
Patient examination.....	34.3	47.9	<.05
Patient treatment.....	10.8	8.3	ns
Treatment planning.....	25.4	20.1	ns
Medications.....	1.1	1.4	ns
Laboratory tests and procedures.....	1.5	2.9	ns
Training.....	.8	.3	ns
Administrative tasks.....	3.7	.8	<.001
Recordkeeping tasks.....	4.3	3.3	ns
Total.....	100.0	100.0	.....

¹ Sign test based on 12 physician-Medex pairs.
NOTE: ns, not significant.

gories, but also in the specific tasks making up the categories. Therefore, the five tasks reported most frequently by physicians and Medex in each of these categories were extracted. The Medex, while certainly active in each category, apparently performs somewhat different tasks from those performed by the physician (see box, p. 343).

In the patient instruction category, the role of the Medex is more that of a provider of information for the patient than of a counselor. The physician provides more of the in-depth information about treatment plans to the patient while the Medex is more involved in practical, day-to-day matters. The patient treatment tasks are less complex for the Medex than for the physician. In the area of treatment planning, an information gathering and synthesizing component for several of the tasks reported by the Medex is seen; for example, "Consult physician or nurse to obtain information or advice on patient care."

The age and sex distribution of patients seen by the physicians alone, the Medex alone, the physicians and the Medex together, and other non-physician, non-Medex provider combinations for the 15 practices that completed patient-contact forms is shown in table 3. The findings suggest that the Medex, as expected, is seeing proportionately more children and young adults. Almost half of the patients seen by the Medex are under age 25, whereas this same age group represents little more than a third of the physicians' clientele. It is possible that the activity of the Medex with the younger

**FIVE TASKS PHYSICIANS AND MEDEX PERFORMED MOST FREQUENTLY
WITHIN THREE TASK INVENTORY CATEGORIES**

**Tasks performed most frequently
by physicians**

**Tasks performed most frequently
by Medex**

Patient Instruction

- | | |
|---|---|
| <ol style="list-style-type: none"> 1. Counsel and instruct patient in the treatment regimen for upper respiratory infection 2. Listen to patient or family, or both, discuss personal problems 3. Explain, answer questions about treatment procedure by telephone 4. Provide support, reassure family of patient's condition or progress 5. Explain physiological basis for therapy to patient or family, or both | <ol style="list-style-type: none"> 1. Explain, answer questions about physician's instructions to patient or family, or both 2. Listen to patient or family, or both, discuss personal problems 3. Inform patient of procedures required before and during examination, test, or treatment 4. Inform patient of progress of therapy 5. Explain, answer patient's questions about symptoms, disease, or treatment |
|---|---|

Patient Treatment

- | | |
|---|--|
| <ol style="list-style-type: none"> 1. Give emergency treatment for laceration 2. Prescribe symptomatic treatment for influenza 3. Prescribe symptomatic treatment for colds 4. Give emergency treatment for sprain, strain, or torn ligament 5. Give emergency treatment for fractures | <ol style="list-style-type: none"> 1. Apply or change sterile dressing 2. Suture skin 3. Clean wound, cut, or abrasion 4. Give first aid for insect bite 5. Give first aid for laceration |
|---|--|

Treatment Planning

- | | |
|---|---|
| <ol style="list-style-type: none"> 1. Evaluate symptoms of patient complaining of sore throat or cough 2. Evaluate symptoms of patient complaining of nasal or sinus problems 3. Screen patients by telephone to determine need for medical attention 4. Evaluate symptoms of patient complaining of nervousness 5. Evaluate symptoms of patient complaining of chest pain | <ol style="list-style-type: none"> 1. Evaluate patient's progress and response to therapeutic regimen 2. Review past and present medical-dental history to plan care 3. Consult physician or nurse to obtain information and advice on patient care 4. Evaluate symptoms of patient complaining of sore throat or cough 5. Evaluate patient's sociocultural background |
|---|---|

patients has freed the physicians to spend more time with their older and more seriously ill patients.

The proportion of female patients seen by the physicians is significantly greater than the corresponding value for the Medex (table 3). The fact that the Medex are seeing proportionately fewer females probably influences the age distribution of their patients. Women in the childbearing years visit physicians' offices far more frequently than

men in the same age groups (5), and very few Medex reported performing obstetrical-gynecologic tasks.

Of all the patients seen during the period in which patient-contact forms were maintained, 1,464 were seen by the physicians alone, 588 were seen by the Medex alone, 566 were seen by the physicians in combination with the Medex, and 504 were seen by other providers such as nurses and medical assistants (table 3).

Table 3. Number and percentage of patients, by age and sex, seen by physicians, Medex, and other providers of care

Age group (years) and sex of patients	Physicians		Medex		Physicians and Medex		Other provider combinations		Total	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
<i>Age</i>										
Under 1.....	65	4	22	4	34	6	22	4	143	5
1- 4.....	62	4	37	6	33	6	15	3	147	5
5-14 ¹	131	9	81	14	81	14	34	7	327	10
15-24 ²	272	18	125	21	89	16	90	18	576	18
25-44.....	394	27	135	23	143	25	118	23	790	25
45-64.....	322	22	112	19	107	19	133	26	674	22
65 and over.....	218	15	76	13	79	14	92	18	465	15
<i>Sex</i>										
Male.....	573	39	308	52	263	46	154	31	1,298	42
Female ³	891	61	280	48	303	54	350	69	1,824	58
Total.....	1,464	100	588	100	566	100	504	100	3,122	100

¹ $P < .001$. ² $P < .05$. ³ $P < .01$.

NOTE: Percentages rounded.

Discussion

The results indicate that the activities of a Medex can be clearly distinguished from those of a physician. The activities of the Medex are office based, and the Medex is less active in areas away from the physician's office and more involved in patient examination and information gathering than the physician. The tasks the Medex performs most frequently are different from those tasks performed most frequently by the physician. The patients the Medex cares for tend to differ from those of the physician in both age and sex, and the Medex sees fewer patients than the physician.

It is important to remember that all of the information and conclusions reported in this study apply to a class of Medex trainees who had just ended their first year in the field. It is possible that the role of the Medex will change as he gains additional expertise and when he becomes a salaried employee who must "earn his keep" in the physician's practice. For example, the core curriculum for the first class of trainees did not include obstetrical and gynecologic tasks. As a result, very few Medex reported performing these tasks. However, it has been learned that several Medex now assume more responsibility in this area. This single change could influence the age-sex distribution of patients seen by the Medex, as well as tasks performed by the Medex.

Physician's assistants are often thought of as one solution to the health care delivery crisis. Re-

sources are being allocated to train physician's assistants. Quantitative data are needed not only to determine the actual role of physician's assistants in ambulatory care but also to evaluate the appropriateness of the role. Studies should again be performed after the Medex have spent a more substantial amount of time in the physicians' practices. Collection of data by trained observers is a method which could be used to obtain the needed information and to validate the research methods employed in this study. Only in this manner can goals of training programs be revised and the benefits of allocating resources to the training of physician's assistants be determined.

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